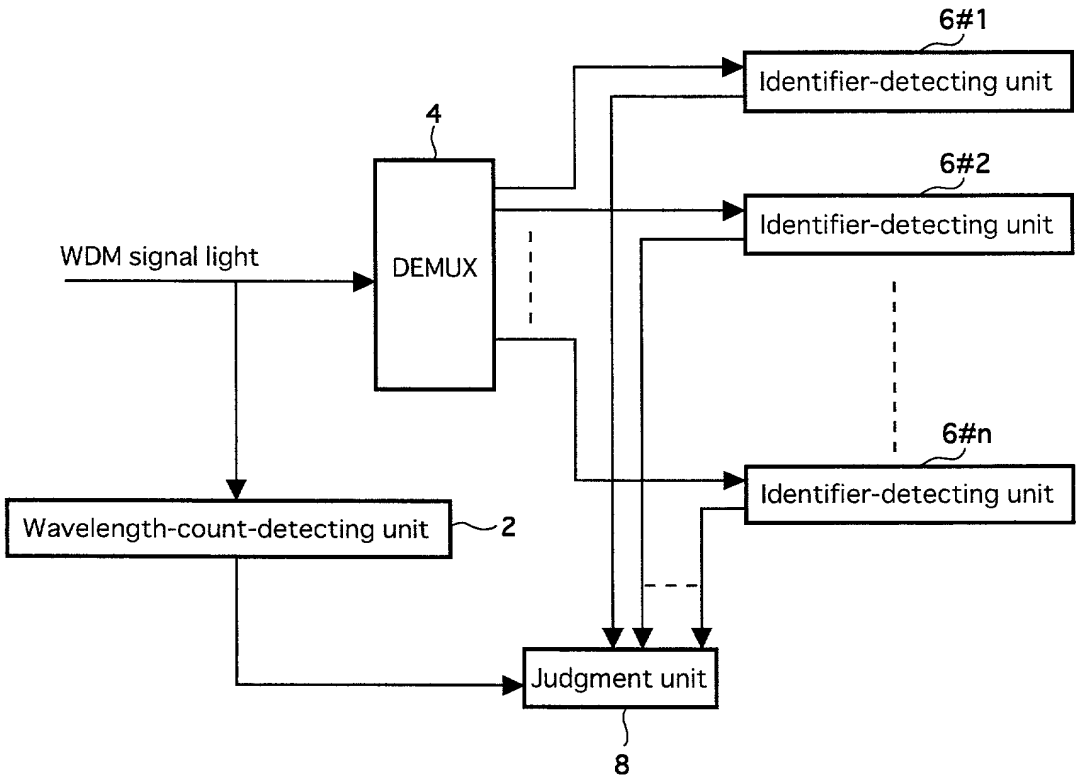
F I G. 1


6#1
Identifier-detecting unit
4
6#2
Identifier-detecting unit
WDM signal light
DEMUX
6#n
Identifier-detecting unit
Wavelength-count-detecting unit
2
Judgment unit
8

2005-10-20 20:54:09

FIG. 2

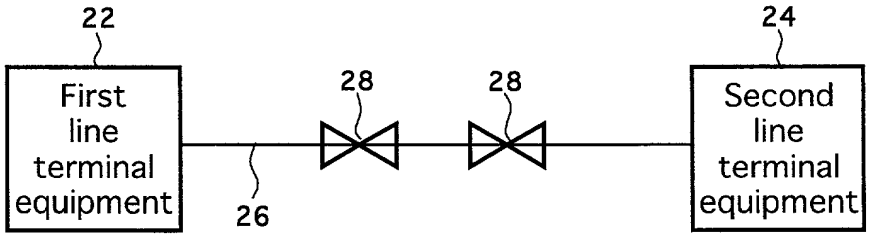


FIG. 3

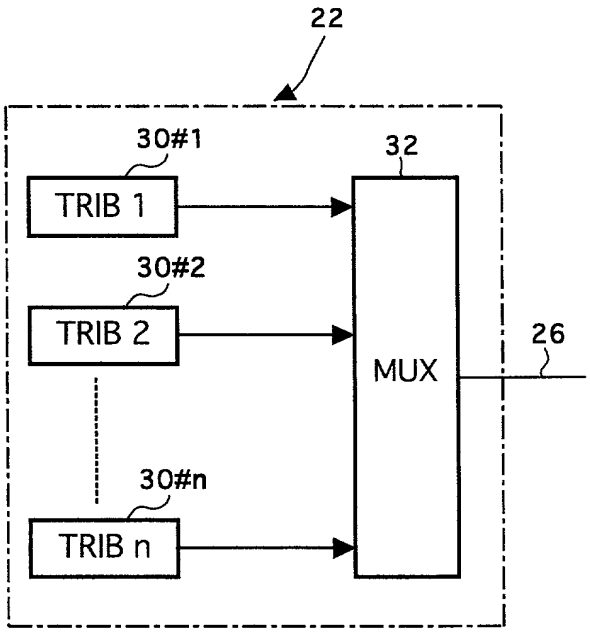


FIG. 4

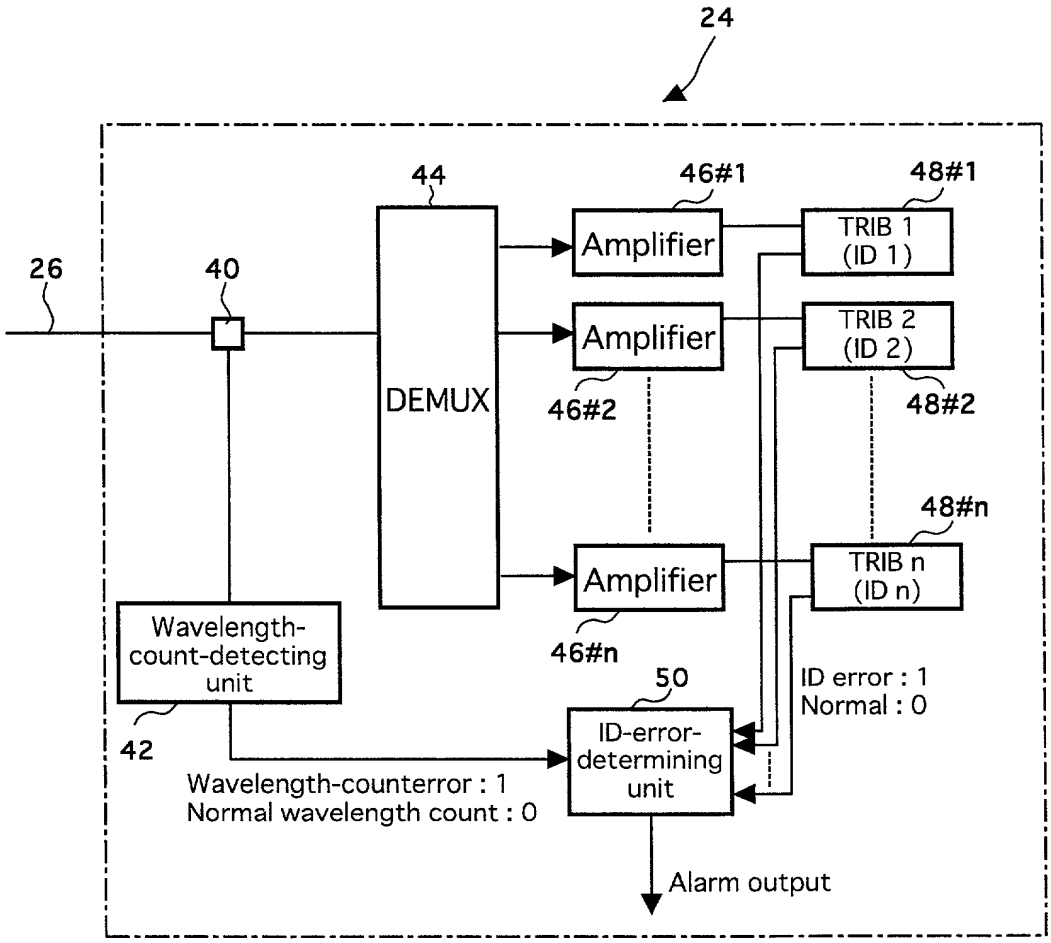
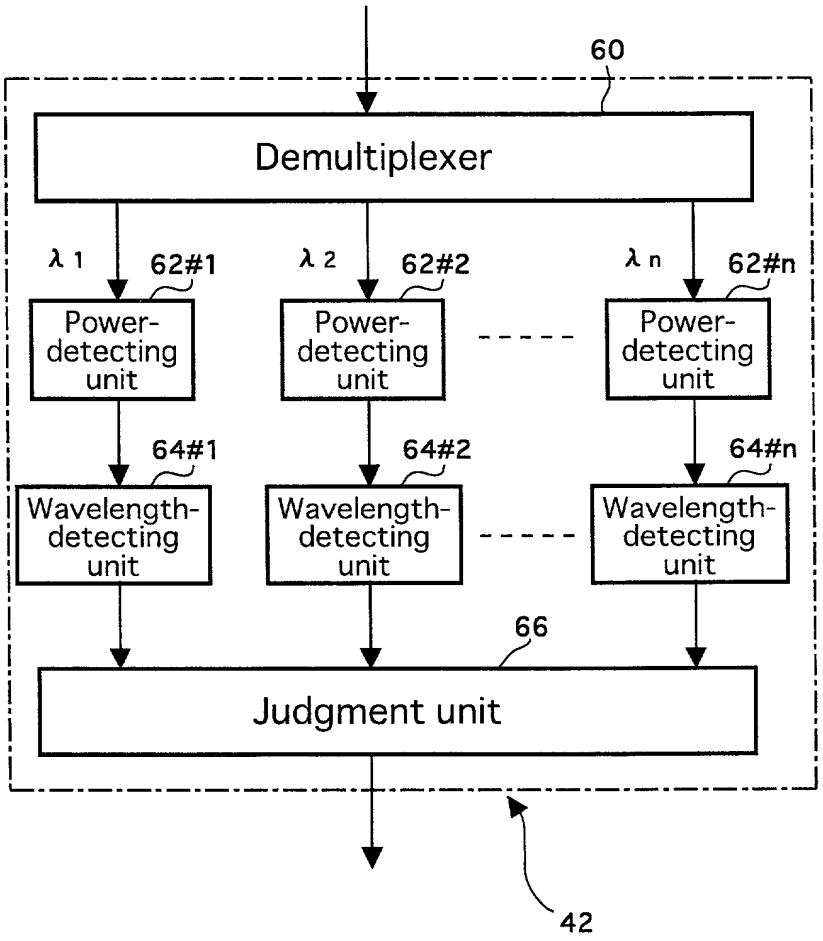

24
26
40
44
DEMUX
46#1
Amplifier
46#2
Amplifier
46#n
Amplifier
48#1
TRIB 1
(ID 1)
TRIB 2
(ID 2)
48#2
48#n
TRIB n
(ID n)
Wavelength-
count-detecting
unit
42
Wavelength-counterror : 1
Normal wavelength count : 0
50
ID-error-
determining
unit
ID error : 1
Normal : 0
Alarm output

FIG. 5


60
Demultiplexer
λ 1
62#1
λ 2
62#2
λ n
62#n
Power-detecting unit
Power-detecting unit
Power-detecting unit
64#1
64#2
64#n
Wavelength-detecting unit
Wavelength-detecting unit
Wavelength-detecting unit
66
Judgment unit
42

F I G. 6

Wavelength count	ID	Alarm output
0	0	None
0	1	ID error
1	0	Optical input down
1	1	Optical input down

Wavelength count (Normal : 0, error : 1)
ID (Normal : 0, ID error : 1)

F I G. 7

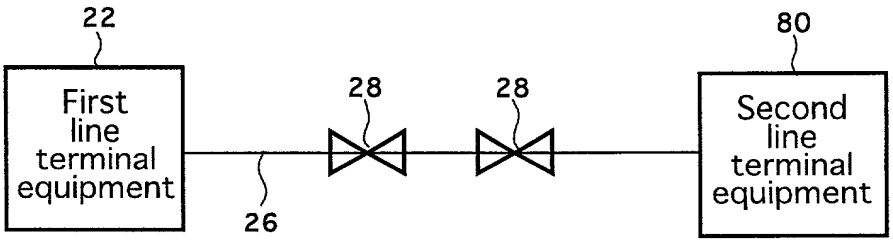


FIG. 8

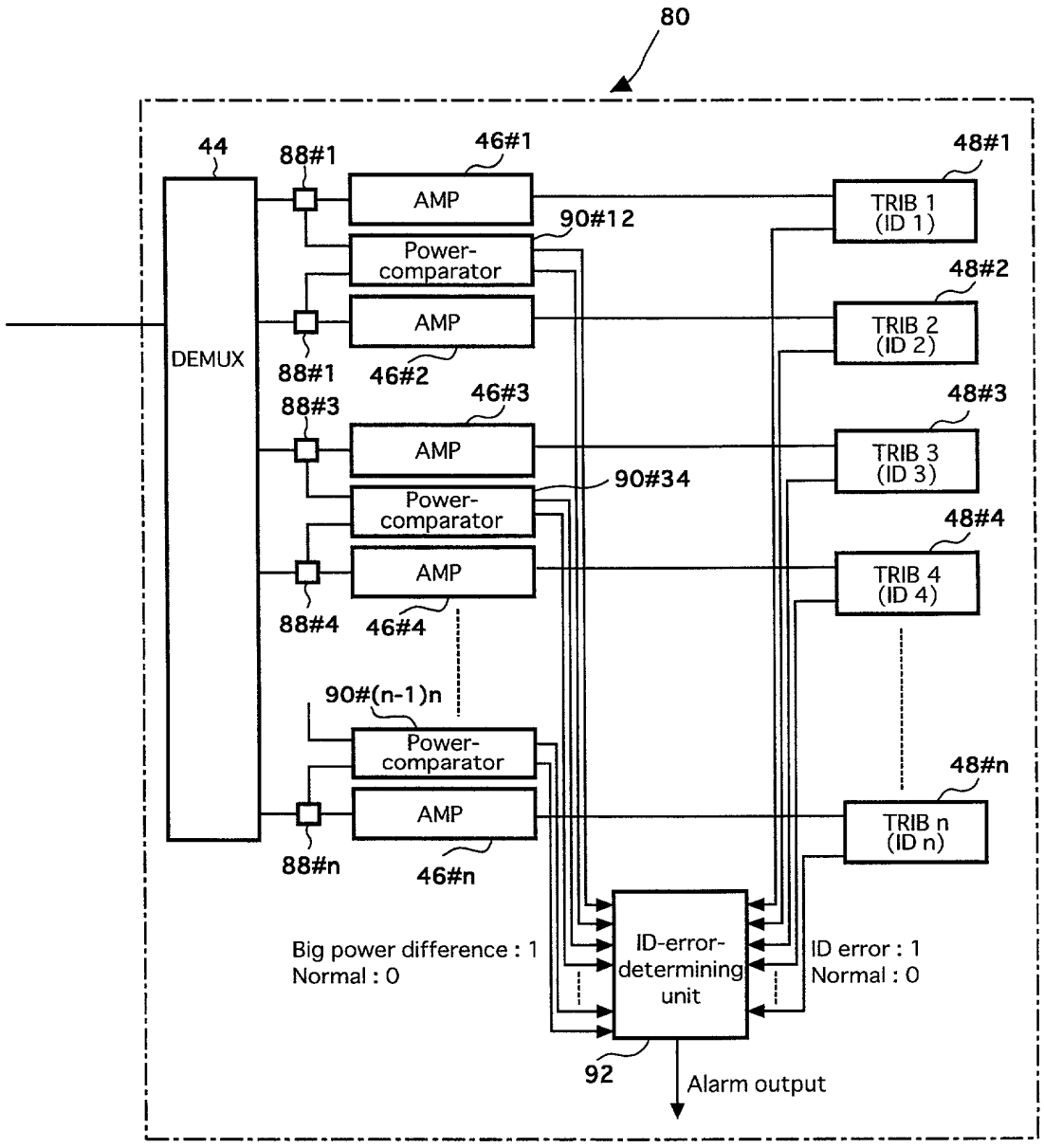

80
44
88#1
46#1
48#1
AMP
TRIB 1
(ID 1)
90#12
Power-
comparator
48#2
AMP
TRIB 2
(ID 2)
DEMUX
88#1
46#2
88#3
46#3
48#3
AMP
TRIB 3
(ID 3)
90#34
Power-
comparator
48#4
AMP
TRIB 4
(ID 4)
88#4
46#4
90#(n-1)n
Power-
comparator
48#n
AMP
TRIB n
(ID n)
88#n
46#n
Big power difference : 1
Normal : 0
ID-error-
determining
unit
ID error : 1
Normal : 0
92
Alarm output

FIG. 9

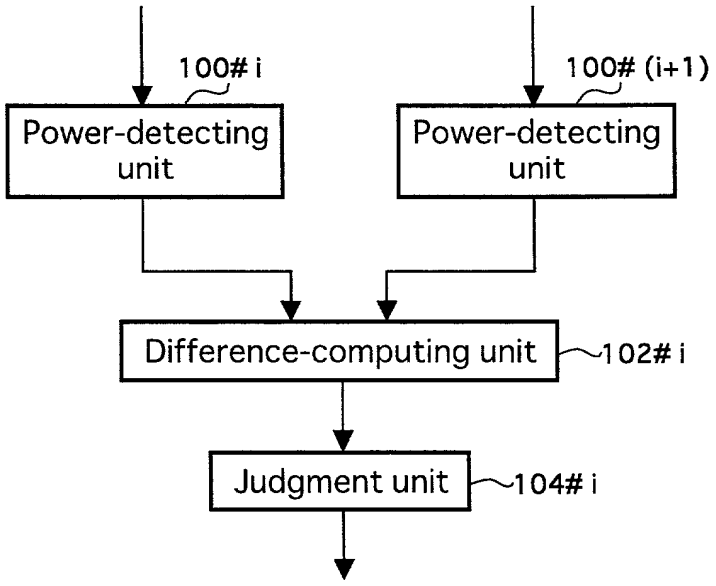


FIG. 10

Comparison result	ID	Alarm output
0	0	None
0	1	ID error
1	0	Optical input down
1	1	Optical input down

Comparison result (Normal : 0, big power difference : 1)
ID (Normal : 0, ID error : 1)

FIG. 11

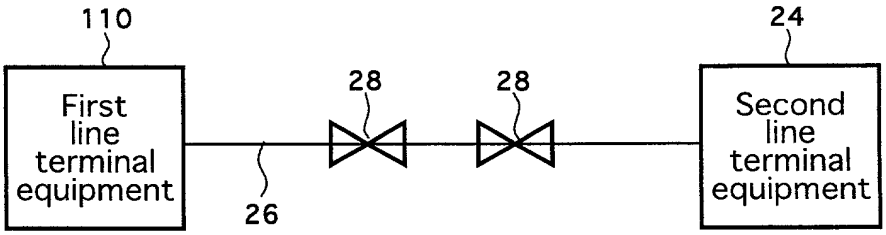

110
First line terminal equipment
26
28
28
24
Second line terminal equipment

FIG. 12

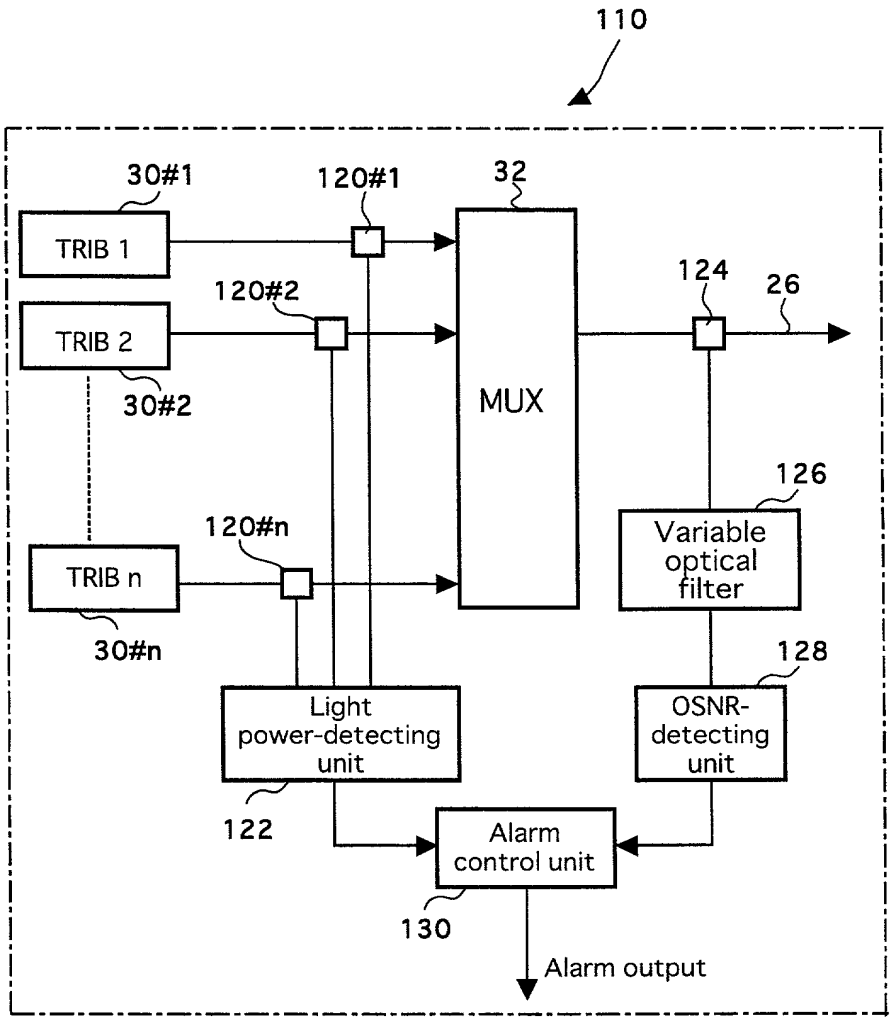

110
30#1
120#1
32
TRIB 1
120#2
124
26
TRIB 2
30#2
MUX
126
120#n
Variable optical filter
TRIB n
30#n
128
Light power-detecting unit
OSNR-detecting unit
122
Alarm control unit
130
Alarm output

FIG. 13

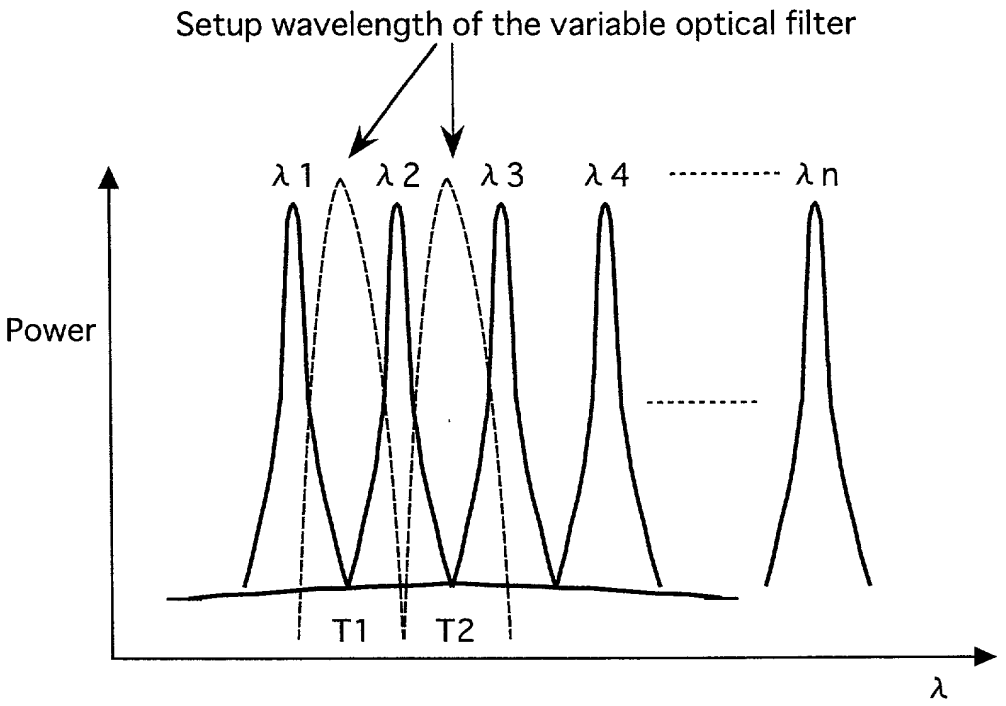

Setup wavelength of the variable optical filter
λ1
λ2
λ3
λ4
λn
Power
T1
T2
λ

FIG. 14A

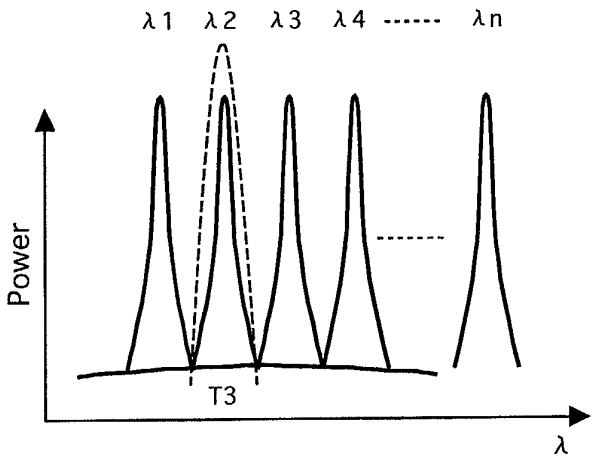


FIG. 14B

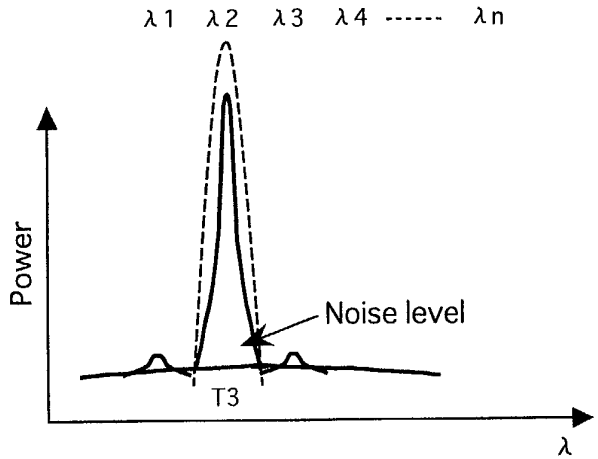


FIG. 14C

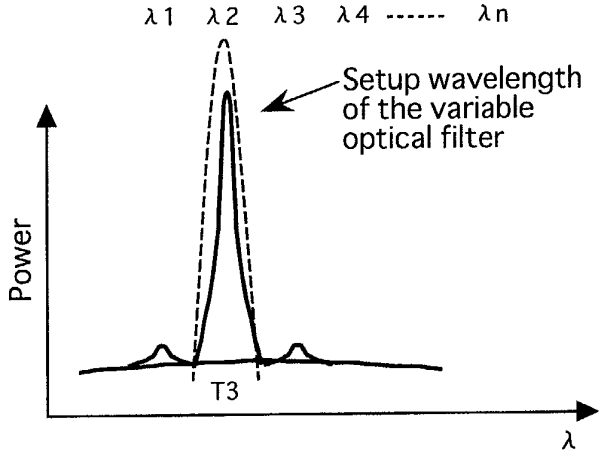


FIG. 14D

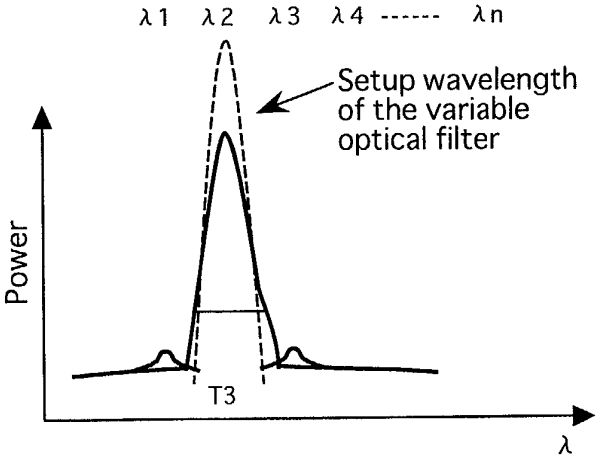


FIG. 15

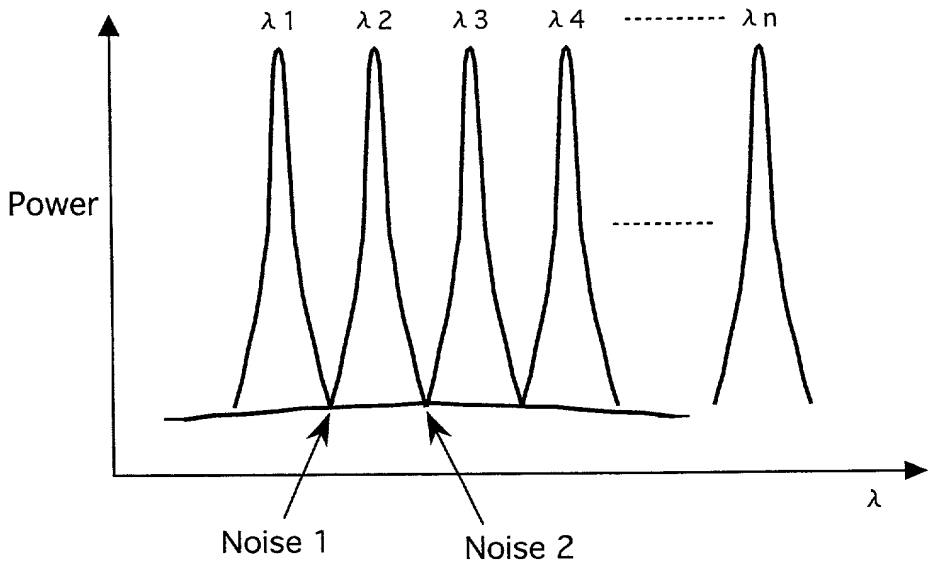


FIG. 16

Light power	ID	Alarm output
0	0	None
0	1	Signal degrade
1	0	Optical output down
1	1	Optical output down

Light power (Normal : 0, abnormal : 1)
OSNR (Normal : 0, abnormal : 1)

FIG. 17

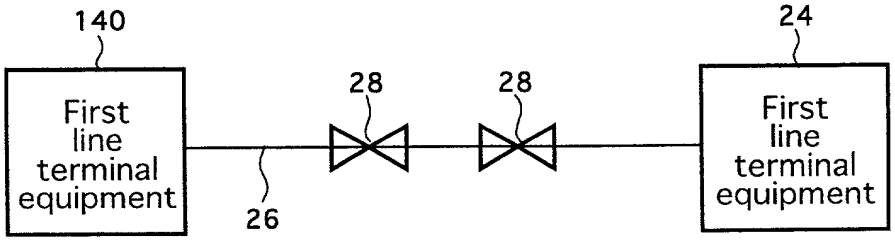


FIG. 18

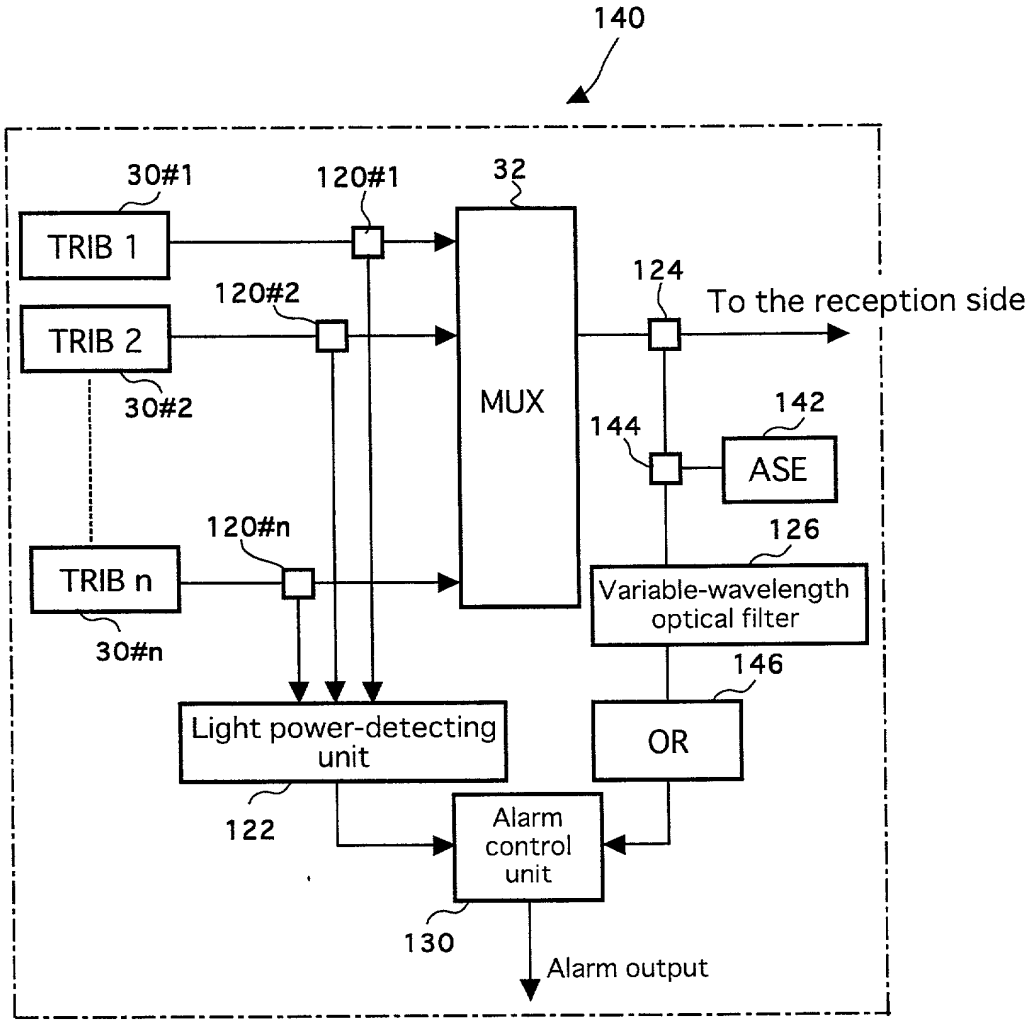

140
30#1
120#1
32
TRIB 1
120#2
124
To the reception side
TRIB 2
30#2
MUX
142
144
ASE
120#n
126
TRIB n
Variable-wavelength optical filter
30#n
146
Light power-detecting unit
OR
122
Alarm control unit
130
Alarm output

FIG. 19

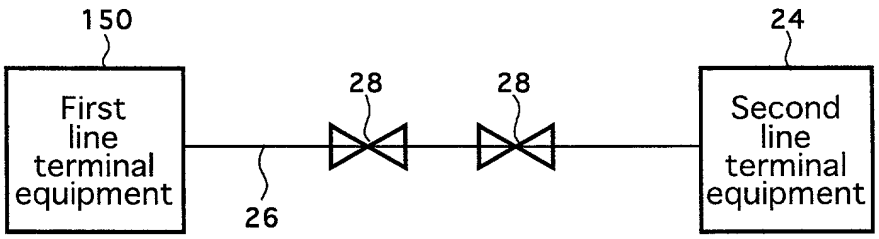
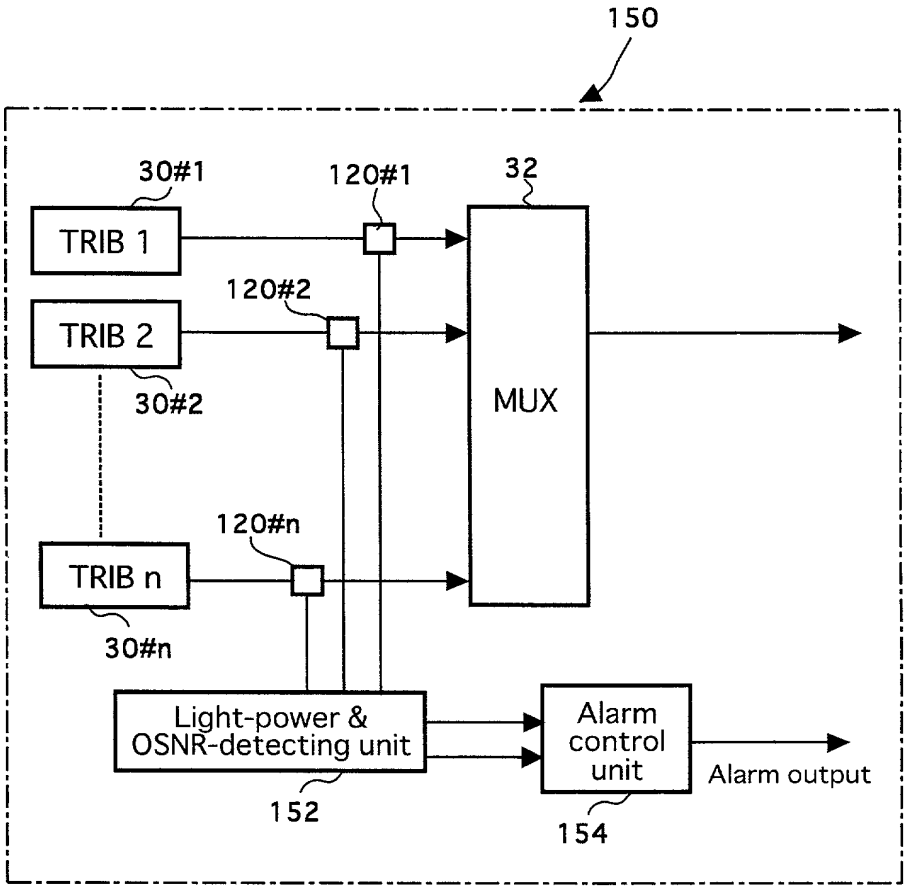
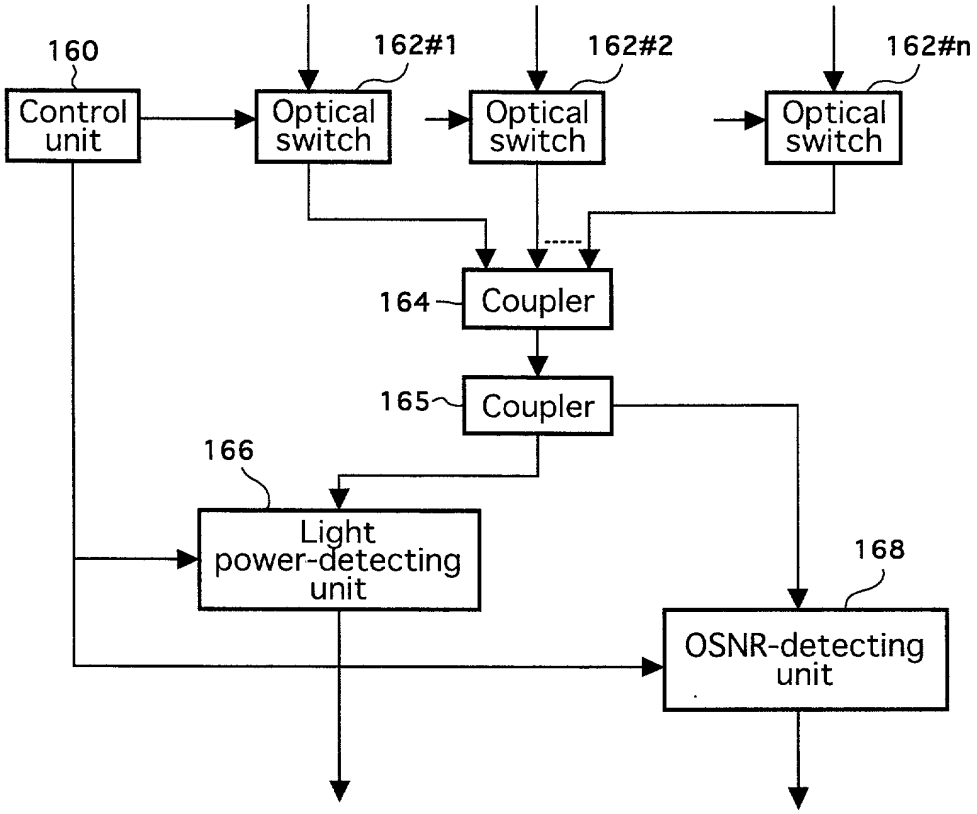

150
24
28
28
First line terminal equipment
Second line terminal equipment
26

FIG. 20


150
30#1
120#1
32
TRIB 1
120#2
TRIB 2
30#2
MUX
120#n
TRIB n
30#n
Light-power &
OSNR-detecting unit
152
Alarm
control
unit
154
Alarm output

F I G. 2 1


160
Control unit
162#1
Optical switch
162#2
Optical switch
162#n
Optical switch
164
Coupler
165
Coupler
166
Light power-detecting unit
168
OSNR-detecting unit

F I G. 2 2

Light power	ID	Alarm output
0	0	None
0	1	Signal degrade
1	0	Optical output down
1	1	Optical output down

Light power (Normal : 0, abnormal : 1)
OSNR (Normal : 0, abnormal : 1)

FIG. 23A

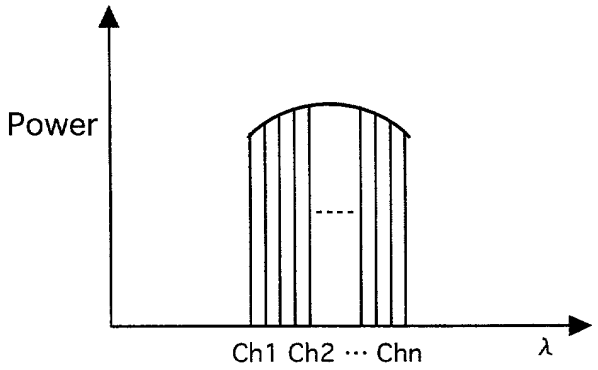


FIG. 23B

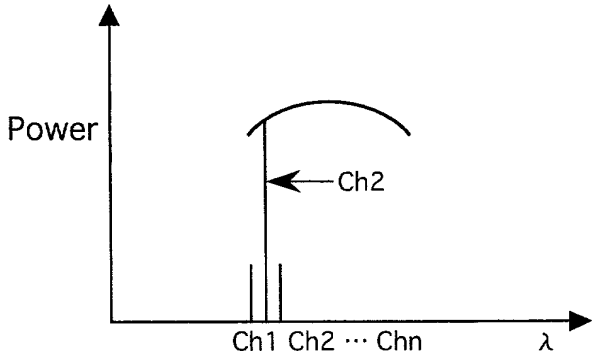


FIG. 23C

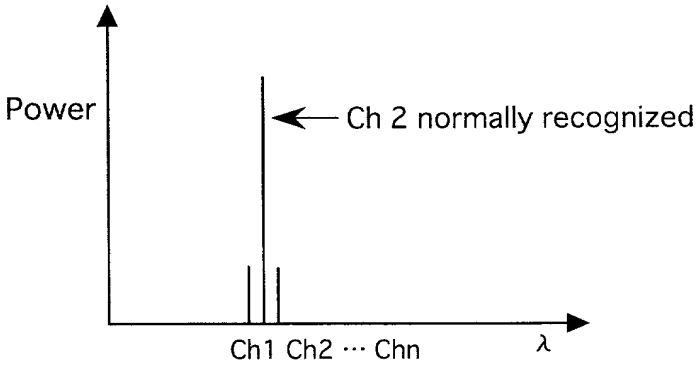


FIG. 24A

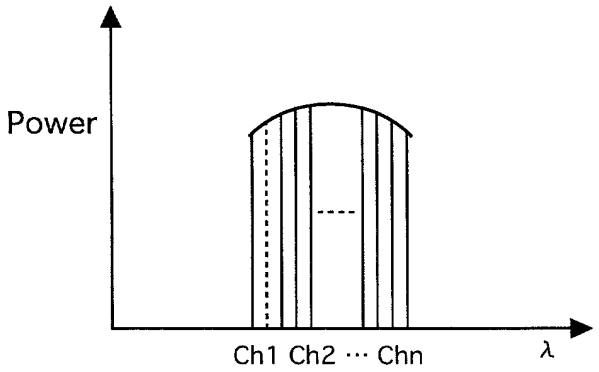


FIG. 24B

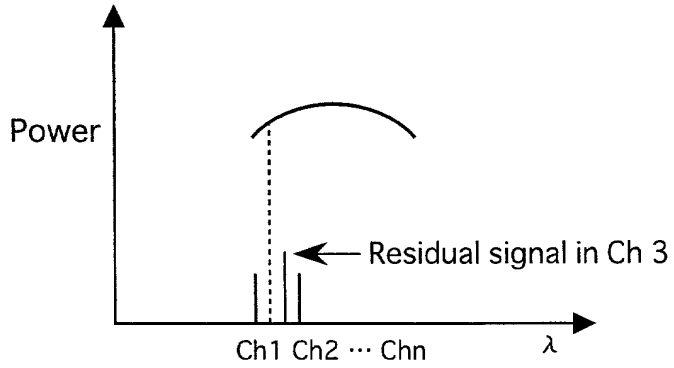


FIG. 24C

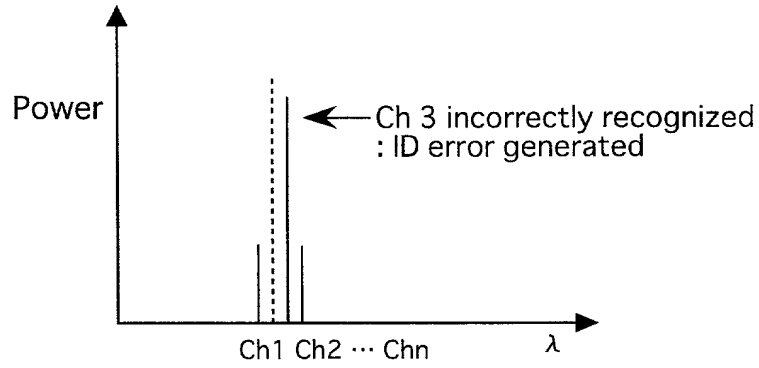


FIG. 25A

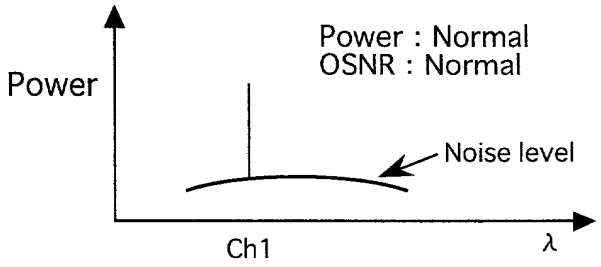


FIG. 25B

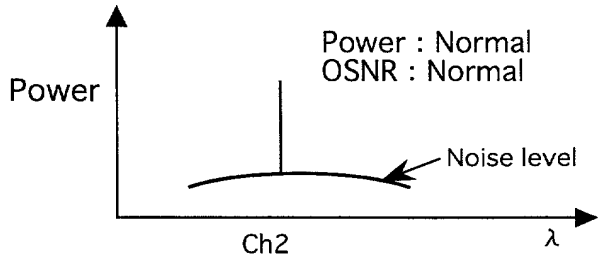


FIG. 25C

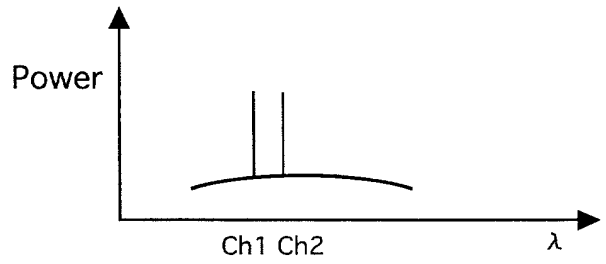


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FIG. 26A

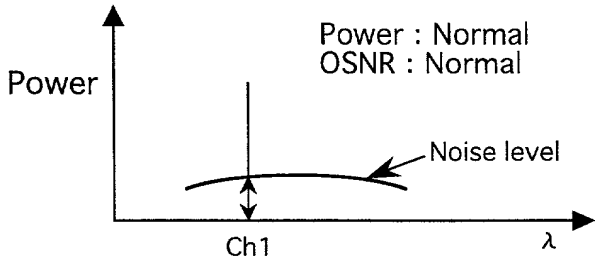


FIG. 26B

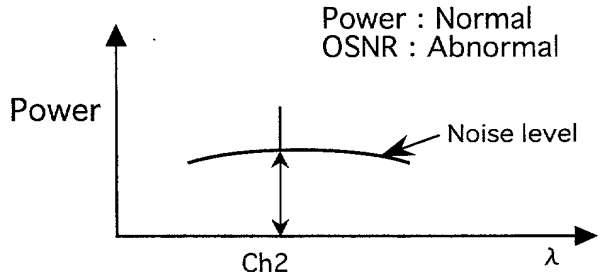
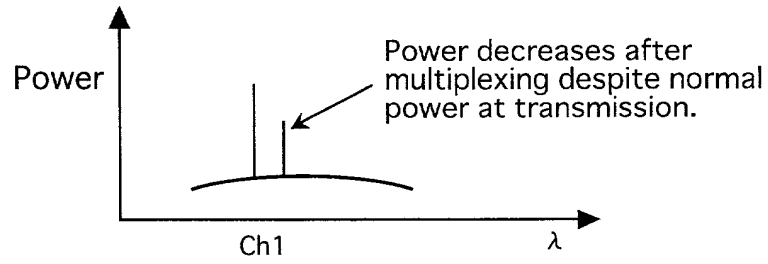


FIG. 26C



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